

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, the method comprising:
  - (a) forming a porous semiconductor layer in the form of a thin film on an original substrate, the forming being immediately followed by
    - (b) separating the thin film by a lift-off process from the original substrate;
    - (c) transferring the thin film to a dummy support, the thin film not being attached to the dummy support;
    - (d) fabricating a device on top of the thin film; and
    - (e) attaching the device on the thin film to a foreign substrate.
2. The method according to Claim 1, wherein (c) and (d) are performed twice, such that the device is fabricated and attached on a first side of the thin film and a second device is fabricated and attached on a second side of the thin film.
3. The method according to Claim 1, wherein the fabricating comprises at least the deposition of an active semiconductor layer on the thin film.
4. The method according to Claim 3, wherein the deposition of the active semiconductor layer is performed by epitaxial Chemical Vapor Deposition.
5. The method according to Claim 1, wherein the transferred device is a non-finished device that is further finished after attachment to the foreign substrate.
6. The method according to Claim 1, wherein the lift-off process is achieved by immersing the substrate in a HF solution in concentration between 12 and 35% and using current densities between 50 and 250 mA/cm<sup>2</sup> without changing any other parameters.
7. The method according to Claim 1, wherein the porous semiconductor layer is a double layer of crystalline or amorphous semiconductor material including silicone germanium, III-V materials such as Ga As, InGaAs and semiconducting polymers.
8. The method according to Claim 1, wherein the foreign substrate comprises a low-cost substrate.
9. A thin film device having an epitaxial layer and a complete porous silicon layer manufactured by a method comprising:
  - forming a porous semiconductor layer on a substrate,

separating, substantially immediately after the forming, the porous semiconductor layer from the substrate;

transferring the porous semiconductor layer to a support, wherein the porous semiconductor layer is not attached to the support;

fabricating a device on the porous semiconductor layer; and

attaching the device and the porous semiconductor layer on another substrate.

10. The method of Claim 9, wherein the act of fabricating a device on the porous semiconductor layer comprises fabricating an epitaxial silicon layer.

11. A system for manufacturing a thin film device comprising:

means for forming a porous semiconductor layer on a substrate,

means for separating the porous semiconductor layer from the substrate; and

means for fabricating a device on the porous semiconductor layer after the porous semiconductor layer is separated from the substrate.

12. The system of Claim 11, further comprising means for attaching the device and the porous semiconductor layer on another substrate.

13. The system of Claim 11, wherein the means for fabricating comprises means for fabricating an epitaxial silicon layer.

14. A method of manufacturing a thin film device comprising:

fabricating a device on a free-standing thin film; and

depositing the thin film device on a substrate.

15. The method of Claim 14, wherein the free-standing thin film is on an intermediate substrate during fabricating and the method further comprises removing the thin film device from the intermediate substrate.

16. The method of Claim 14, wherein the thin film device is a solar cell.

17. The method of Claim 14, wherein the substrate comprises glass.

18. A method of manufacturing a thin film device comprising:

forming a thin film on an original substrate;

separating the thin film from the original substrate;

transferring the thin film to a dummy support so that the thin film is free-standing;

forming an active layer on the thin film; and

attaching the active layer and the thin film to a foreign substrate.

19. The method of Claim 18, wherein attaching comprises bonding the active layer and the thin film to the foreign substrate.

20. The method of Claim 18, wherein forming of the active layer is performed using chemical vapor deposition.

21. A method of manufacturing a thin film device comprising:

- (a) forming a thin film on a substrate;
- (b) separating the thin film from the substrate using a lift-off process; and
- (c) repeating (a) and (b) so that the substrate is reused to make multiple thin films.